

# AI in Finance Application

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## ABSTRACT

Artificial intelligence (AI) is used in the financial services industry to automate, enhance, and optimize processes; make more accurate predictions; and autonomously learn from experience.

AI in finance includes machine learning, deep learning, reinforcement learning, natural language processing, graph algorithms, evolutionary learning, and other techniques. You can apply these techniques using MATLAB®.

Deep learning, a subset of machine learning, utilizes neural networks and is applied to machine learning problems simultaneously perform feature extraction and prediction within the neural network architecture. This approach eliminates the need to perform feature extraction prior to developing a predictive model. Moreover, deep learning requires a substantial historical training data set to build a robust and accurate predictive model. For example, nonlinearities in oil price distribution such as volatility are captured by neural network models.

Reinforcement learning helps alleviate this challenge by generating the needed data. It does this through repeated simulations (via trial and error) with a reward structure for good outcomes. Its aim is to learn a “behavior” as opposed to fitting a model with the highest possible accuracy. The goal of reinforcement learning is to train a model to take actions or make decisions in order to maximize the cumulative reward. One financial application is to train an agent to hedge a European call option contract and save on transaction costs.

In this session, you will see practitioners of AI application in finance.

## Highlights

- Classifying Trading Signal using Machine Learning and Deep Learning
- What is Reinforcement Learning?
- Case Study: Development of a self-learning financial trading agent